

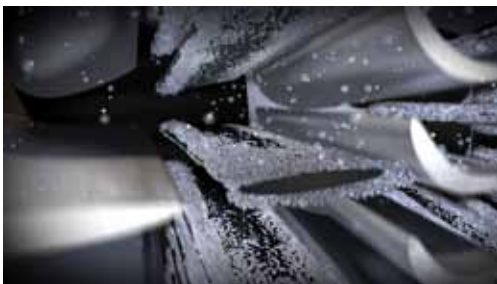
NASA Glenn Research Center Propulsion Systems Laboratory

Jet Engine Icing Enhancement

AVIATION SAFETY ISSUE

Studies conclude there are over 140 loss of thrust control incidents thought to be a result of operating in a high-altitude ice crystal environment.

NASA Aeronautics Test and Aviation Safety programs have invested in researching engine icing at NASA Glenn's Propulsion Systems Laboratory (PSL).



OBJECTIVES

- Improve aviation safety
- Establish an altitude, ice crystal icing jet engine test facility to perform full-scale engine testing under simulated flight conditions
- Perform research focused on the physics of ice crystal icing to support new engine development to meet newly proposed engine certification requirements
- Develop computer codes to predict engine susceptibility to operation in ice crystal icing conditions
- Develop future supercooled liquid water and mixed phase testing capabilities
- Collaborate with industry and Government agencies

ICE CRYSTAL SYSTEM CAPABILITIES

	Minimum	Maximum
Altitude, ft	4000	40 000
Total temperature, °F	-60	15
Mach number	0.15	0.80
Flow, pps	10	330
Icing water content, g/m ³ cloud density	0.5	9.0
Median volume diameter, μ	40	60
Run time	Continuous	

NASA PSL is one of the Nation's premier direct connect **altitude** simulation facilities for full-scale gas turbine engine and propulsion system research.



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For more information contact Thomas R. Hoffman at 216-433-5637 or visit the PSL Web site at <http://facilities.grc.nasa.gov/PSL>.